

Which Font Looks Best in a Figure?

■ YOUR FIGURES HELP DELIVER YOUR SCIENTIFIC STORY

When designing and rendering figures, your goal is to translate your science into a visual image to convey your results, your thoughts, and your conclusions, to your reader. You stand a greater chance of success of making your point if your images are clean, graphically attractive, and well-composed. Tips for effective graphical presentation of your research results have been summarized in a variety of places, as referenced here.^{1–4}

Although we have noticed that the quality of figures continues to improve, a large fraction of authors continue to use fonts that are distracting, and are less attractive and professional.

Question: “Which font looks best in a scientific figure?”

Answer: “Arial or Helvetica, always.”

■ INTRODUCTION TO SERIF AND SANS SERIF FONTS

As shown in Figure 1, Arial and Helvetica are called “sans serif fonts”, because they are missing the little tick marks at the end of each letter, as shown in Figure 2 for Times (a font that has serifs)

Materials (Arial)
Materials (Helvetica)
Materials (Times)
Materials (Times New Roman)
Materials (Calibri)

Figure 1. Commonly used fonts.

Times is a ‘serif font’ ○ = serif
Helvetica is a sans-serif font

Figure 2. Visualization of the serifs in a font, in this case, Times font, contrasted with Helvetica, a sans serif font.

and Helvetica (a font without serifs, known as a sans serif font). If you downloaded this editorial as a PDF file, you are reading a serif

font, but if you are reading it online (as HTML), you are reading a sans serif font (looks like Helvetica or Arial). Sans serif fonts are ideal for graphics because they have a cleaner appearance, enabling your reader to quickly read the text unimpeded as they work through your data. Many people have a strong aversion to Times font in graphics, particularly in chemical structures (e.g., ChemDraw images), and thus a standard Arial or Helvetica font will avoid such an effect.

■ EXAMPLES OF CLEAN FIGURES USING SANS SERIF FONTS

As examples of the use of a sans serif font, like Arial or Helvetica, images from two of our most highly downloaded papers are included here in Figures 3 and 4.⁵ In Figure 3, the authors introduce calcium ion batteries; in the paper, they need to describe materials and structure, as well as device performance.⁶ As can be seen from the figure, the authors succeed in demonstrating both, and use a sans serif font, which renders a clean look to an already complex message. Figure 4 succeeds at a task that is even more challenging—the authors present a large quantity of disparate data in one figure to substantiate their claim of single crystallinity of their copper nanooctahedra, as well as plasmonic properties.⁷ The combination of data in one figure could have been overwhelming and confusing for a reader. Because the figures are sufficiently large, balanced, and nicely composed, and the font (a clean sans serif font) consistent throughout in terms of size, the image is easy to read and understand.

■ COMPARISON OF A CHEMICAL STRUCTURE THAT USES HELVETICA AND TIMES FONT

Many people find the use of Times font in a ChemDraw structure surprisingly irritating. If you use the ChemDraw product, you can “apply document settings from ACS”, which uses Helvetica font, and has the correct balance between atomic (font) size and bond length. A molecule of interest for organic photovoltaics is shown in Figure 5,⁸ drawn with three slightly different variations, using the basic ACS document setting. In the bottom two, the default

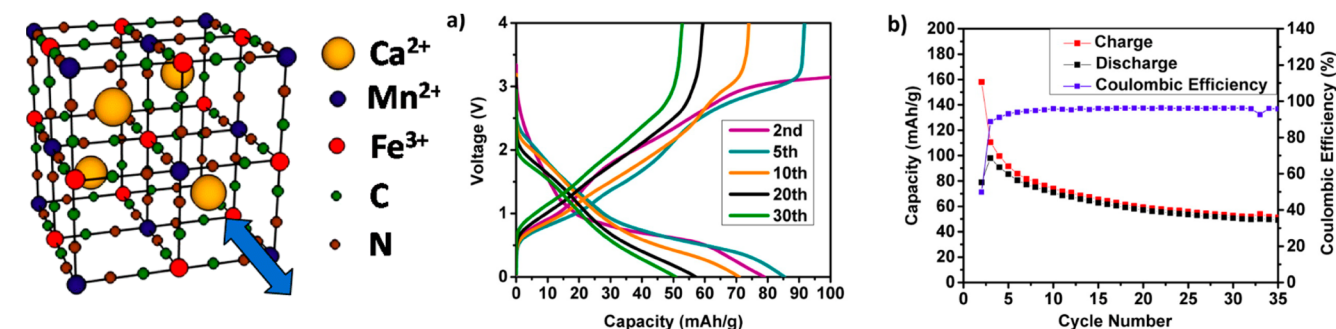


Figure 3. Figures (the table of contents image, and battery performance data) republished from one of our most highly downloaded papers that uses a sans serif font. Republished with permission from ref 6. Copyright 2015 American Chemical Society.

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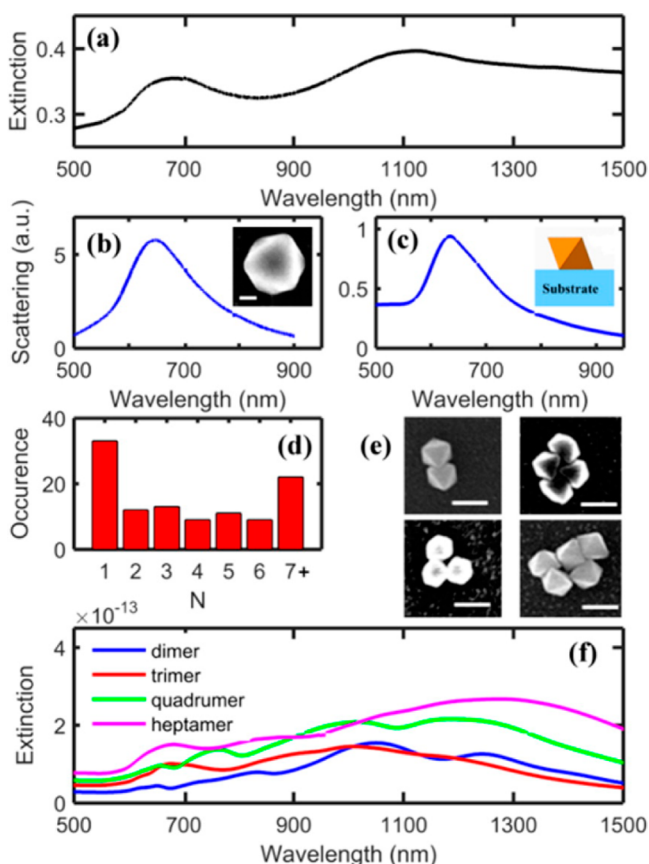


Figure 4. Complete figure republished from one of our most highly downloaded papers that uses a sans serif font. Republished with permission from ref 7. Copyright 2015 American Chemical Society.

Helvetica font has been changed to Times font. The bottom two structures are less graphically attractive.

SUMMARY

Although the choice of font sounds picky and perhaps esoteric, it is much more productive to express your creativity through your science, and your graphics. The reader will not be distracted by your clean Arial or Helvetica font, and will only pay attention to your science, which is the goal of every scientific publication.

Jillian M. Buriak, Editor-in-Chief

AUTHOR INFORMATION

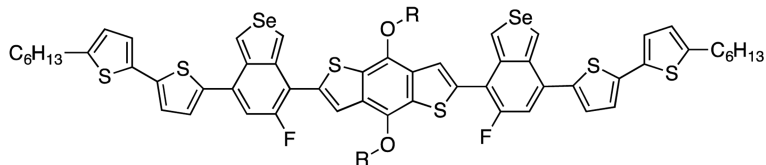
Notes

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

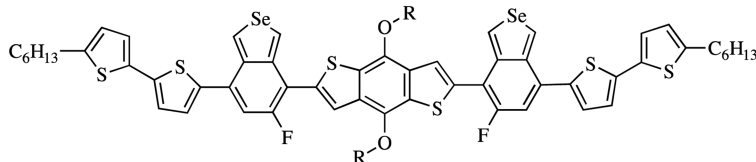
RELATED READINGS

- (1) Kamat, P.; Hartland, G. V.; Schatz, G. C. Graphical Excellence. *J. Phys. Chem. Lett.* **2014**, *5*, 2118–2120.
- (2) Buriak, J. M. Titles and Table of Contents Images: The Candy Store Analogy. *Chem. Mater.* **2014**, *26*, 1289–1290.
- (3) Buriak, J. Summarize Your Work in 100 ms or Less... The Importance of the Table of Contents Image. *ACS Nano* **2011**, *5*, 7687–7689.
- (4) Rolandi, M.; Cheng, K.; Pérez-Kriz, S. A Brief Guide to Designing Effective Figures for the Scientific Paper. *Adv. Mater.* **2011**, *23*, 4343–4346.
- (5) As can be seen here: <http://pubs.acs.org/action/showMostReadArticles?journalCode=cmate>.
- (6) Lipson, A. L.; Pan, B.; Lapidus, S. H.; Liao, C.; Vaughey, J. T.; Ingram, B. J. Rechargeable Ca-Ion Batteries. *Chem. Mater.* **2015**, *27*, 8442–8447.
- (7) Lu, S.-C.; Hsiao, M.-C.; Yorulmaz, M.; Wang, L.-Y.; Yang, P.-Y.; Link, S.; Chang, W.-S.; Tuan, H.-Y. Single-Crystalline Copper Nano-Octahedra. *Chem. Mater.* **2015**, *27*, 8185–8188.
- (8) He, X.; Cao, B.; Hauger, T.; Kang, M.; Lubner, E. J.; Gusarov, S.; Buriak, J. M. "Donor-Acceptor Small Molecules for Organic Photovoltaics: Single Atom Substitution (Se, S)". *ACS Appl. Mater. Interfaces* **2015**, *7*, 8188–8199.

Good: ACS document setting (Helvetica)



Not great: ACS document setting, font changed to Times



Bad: ACS document setting, but very small Times font

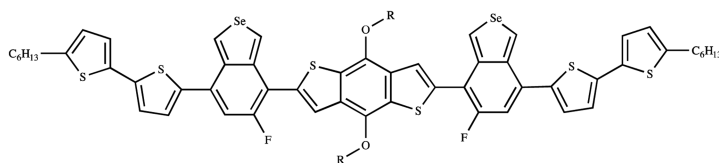


Figure 5. Example of a molecule drawn using document settings from ACS in ChemDraw unchanged (above, with Helvetica font), and after substitution of Helvetica with Times font (middle, bottom).